Tennessee Pollution Prevention Partnership Success Story

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Continuous Improvement in Hazardous Waste Reduction

The Member

DENSO Manufacturing Athens Tennessee, Inc. (DMAT) is part of DENSO Corporation's global network of 74 subsidiaries in 29 nations and the largest producer of advanced technology, components and systems for all major automakers. DMAT employs approximately 900 associates. Automotive components and systems produced at the DMAT include the following: oxygen sensors, fuel injectors, fuel rails, ignition coils, monolithic carriers and spark plugs.

The Story

The Universal Concept Fuel Injectors manufactured at DMAT are made for use with alternative fuels such as E85. The injectors have a unique atomizing capability that dispenses fuel in precise quantities and allows for better mixing with air, thereby increasing fuel efficiency.

DMAT uses a petroleum distillate as a calibration fluid to test the fuel injectors in various stages of the assembly process. For safety reasons, DMAT uses this calibration fluid as a substitute for gasoline in this process. When the calibration fluid could no longer be effectively used in this process DMAT would dispose of the used calibration fluid as a hazardous waste.

DENSO encourages associate involvement in continuous improvement activities. The DMAT IDEA program rewards critical thinking and improvement in DENSO's work environment. A Fuel Injector Assembly / Calibration technician investigated how to minimize the amount of used calibration fluid generated.

The Fuel Injector Assembly / Calibration technician diverted many of the waste drain lines back into the process. This was successful in keeping the calibration fluid in the process longer. Additionally, new equipment being installed was plumbed to recapture the calibration fluid.

DMAT had successfully reduced the generation of a large percentage of used calibration fluid but was still unavoidably generating used calibration fluid. DMAT investigated possible manufactures that could reuse the material. The EPA allows for material that is sold as a product with no additional processing required, to no longer be considered a hazardous waste.

DMAT partnered with a manufacturer that could use the used calibration fluid "as is" as an effective substitute for virgin commercial chemical products in their process. The company manufactures an asphalt impregnated fiber expansion joint for use on highways, streets, airport runways, sidewalks and driveways.

After receiving approval from the Tennessee Department of Environment and Conservation (TDEC) for our proposal, DMAT negotiated terms with the manufacturer and then began to accumulate the petroleum distillates to sell as a product.

The Success

Our focus on this project resulted in the elimination of our largest hazardous waste stream and provided significant cost savings. Over $24,000 in annual savings are realized from avoiding new material cost, waste disposal cost, transportation cost and the sale of the used calibration fluid. The reuse system has been incorporated in new DENSO fuel injection manufacturing equipment in Japan. This project is a good example of employee involvement, continuous improvement, idea sharing and overall commitment to prevent pollution.

The Pollution Prevented

The drain line reuse project eliminates the generation of over 13,000 pounds of hazardous waste annually. In less than 12 months, the sale of the used calibration fluid for reuse has eliminated the disposal of over 26,000 pounds of petroleum distillates.

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